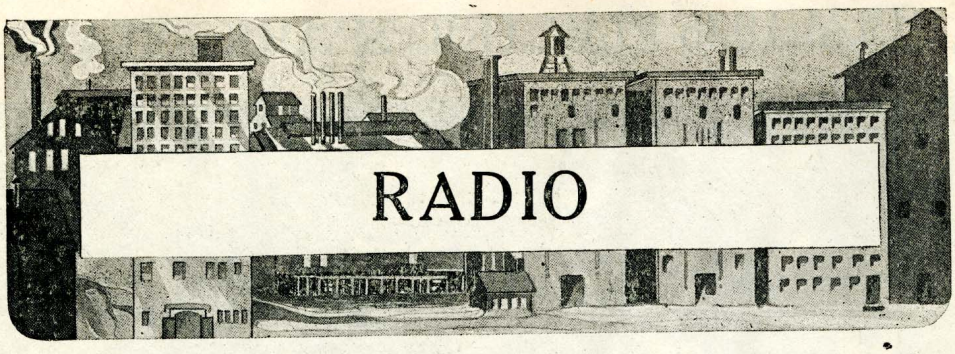
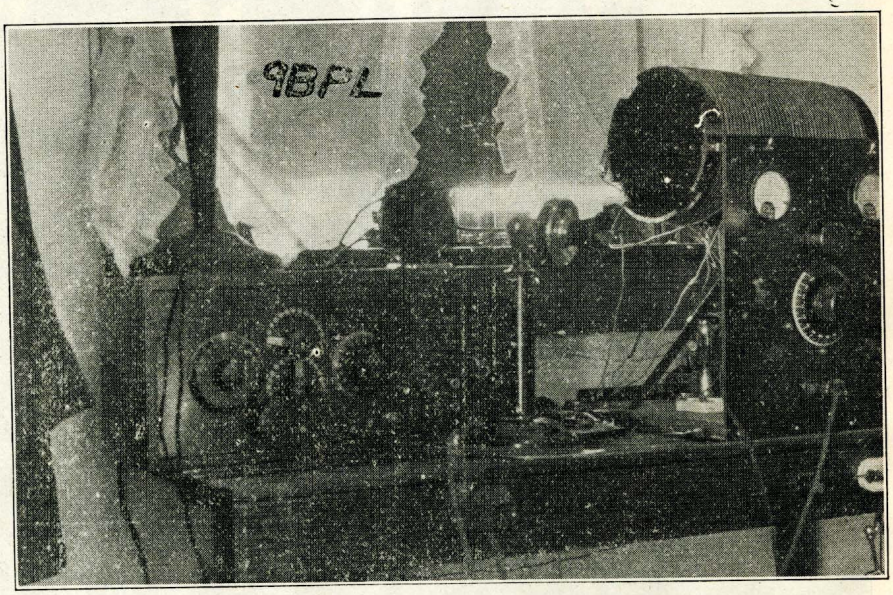


AMATEUR RADIO STATION "9 B P L"

By G. E. Flanders

Everyone knows more or less, but mostly less, about an amateur radio station. However the photograph of the station herewith submitted does not tell us much about the apparatus. The theory can be found scattered here and there in text books, in operating experience, in lectures, and in interviews with radio men. But the average man never gets the idea logically or in sequence in such a manner. I do not intend to go into the theory of the transmitter here because it would take too much space as I have been asked to write on the details of my particular station (9BPL) I will limit this article to that alone.



9BPL, Mr. Flander's Radio Station.

First I shall describe the antenna system as used at 9BPL. A cage aerial is used which is fifty feet long, supported by two fifty-foot masts. The upright cage is comprised of six wires, each fifty feet in length. The lead-in cage is comprised of four wires, each fifty feet long. This makes a total of five hundred feet of wire in the antenna system. The antenna is insulated with a number of six-inch pynex insulators. I shall not go into details about the grounding system, except to say that a three wire counterpoise is employed.

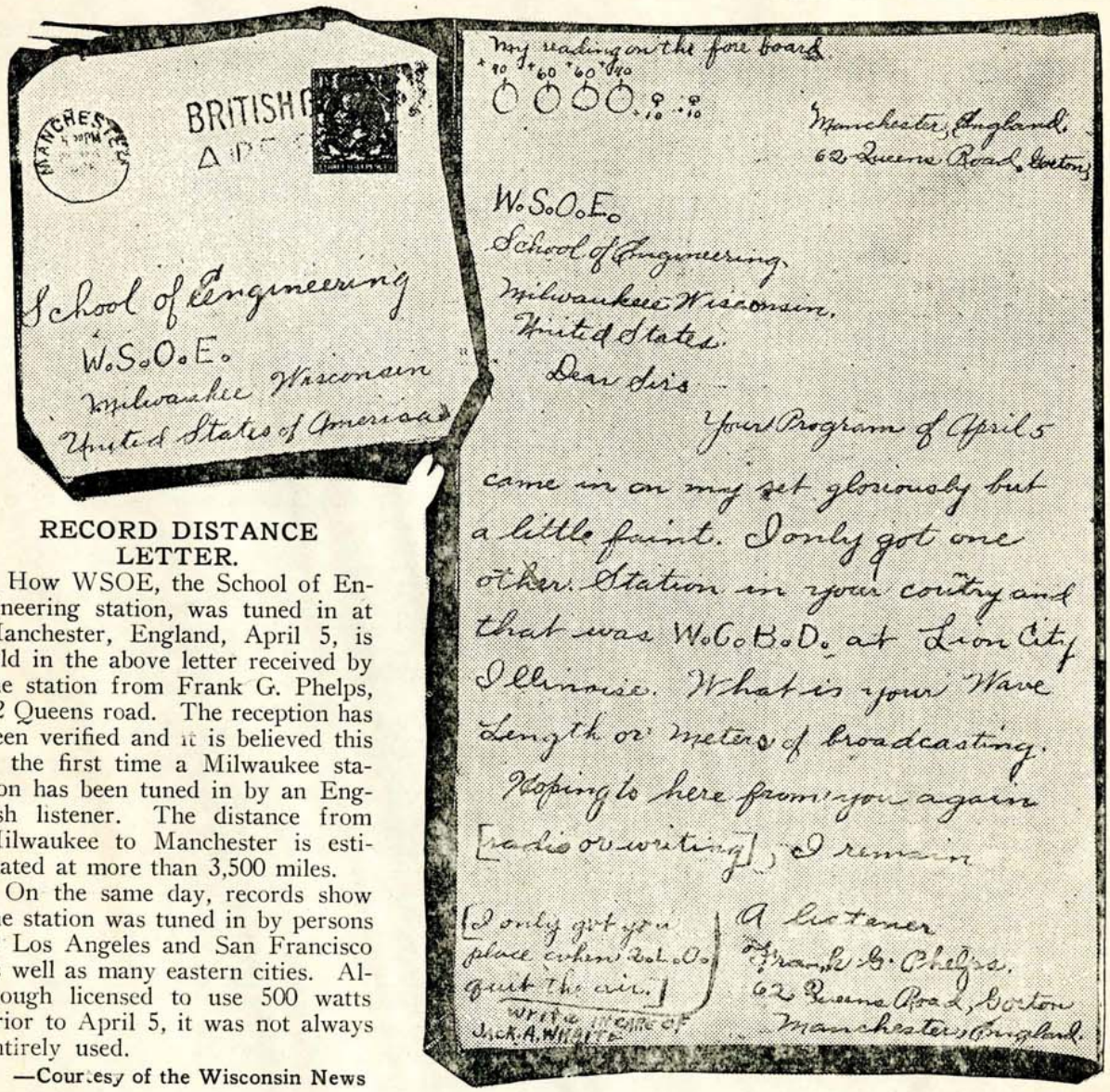
Now we come to the transmitter itself. This transmitter employs the conventional "Heissing" system of modulation, which is a variation of plate power on voltage supplied to the plate circuit of the oscillator tube. This system requires extra tubes and apparatus but gives best results.

A modulation transformer is used, which in other words is a step-up transformer whose primary is operated by the microphone and battery. The oscillator tube, which is connected across the modulator tube, is regarded as a resistance. The microphone and small battery set up a varying voltage in the primary which is stepped up in the secondary and applied to the grid of the modulator tube. In this way the speech is amplified and passed to the plate of the oscillator tube. A choke coil is placed in series with the plate power. This helps the plate power action so that when the microphone is spoken into, the battery will act somewhat as a variable battery and variations of the tube voltages will follow the variations of the operator's voice. The oscillator tube acts as a leading resistance and when its resistance equals the resistance of the modulator tube the maximum power is supplied it. Oscillator tubes and modulator tubes are always of the same electrical characteristics so that they will possess equal resistance.

The next important part of the transmitter is the oscillator system. The usual oscillating system is the "Meissner" method of generating high frequency oscillations and this is the type of system employed at my station.

The several circuits available for use in radio telephony fall under two general classifications; the self-excited and the externally-excited. The Meissner circuit is the best of this type because it is easy to adjust to different aerials, grounds, and it gives a fairly steady wave.

Three five-watt tubes are used, one in the speech amplifier circuit, one in the modulator circuit and one in the oscillator circuit. The transmitter is home made, as is the receiver. The inductance, that ap-



RECORD DISTANCE LETTER.

How WSOE, the School of Engineering station, was tuned in at Manchester, England, April 5, is told in the above letter received by the station from Frank G. Phelps, 62 Queens road. The reception has been verified and it is believed this is the first time a Milwaukee station has been tuned in by an English listener. The distance from Milwaukee to Manchester is estimated at more than 3,500 miles.

On the same day, records show the station was tuned in by persons in Los Angeles and San Francisco as well as many eastern cities. Although licensed to use 500 watts prior to April 5, it was not always entirely used.

—Courtesy of the Wisconsin News

pears in the picture, is wound on a bakelite tube, which was once used on the core of a power transformer.

You might at once say that I am enthusiastic for phone work. You may be right. I incorporated phone in this transmitter, because the apparatus is much more complicated than an ordinary continuous wave or interrupted continuous wave, but I do a great deal of work on C. W., and use the buzzer for I. C. W. transmission.

The power for the plate is supplied from a five hundred volt motor generator and the filament voltage is obtained from a filament transformer. At an earlier date an electrolytic rectifier using a sodium borate solution as electrolyte, was used to rectify an eight-hundred volt transformer plate supply, but this caused so much trouble that the motor generator was installed. The rectifier and power transformer are still in the station in case trouble occurs in the motor generator. The receiver, as shown, is discarded now, because of the lower waves being used by the amateurs, and a B. T. short wave receiver (12½ to 200 meters) substituted.

Electric Sparks wants more articles of the kind submitted by Mr. Flanders. Our students enjoy such subjects particularly those that spring from their own experiences. Mr. Flanders was the editor of Electric Sparks for a time and his work was of such merit that our paper advanced rapidly. An unfortunate illness kept him from taking up the editorship last September. We hope to have more articles from Mr. Flanders' pen.

PUBLIC INVITED TO BECOME AMATEURS

That the American radio amateur has extended the hand of welcome to his cousin, the broadcast listener-experimenter, and is undertaking to show him how easy it is to engage in two-way telegraphic communication with the far distant places of the earth, is shown in a statement just issued by Hiram Percy Maxim, president of the American Radio Relay league, the national association of amateurs and experimenters.

Commenting upon the tribute paid the American amateur by Judge Stephen B. Davis, of the de-

partment of commerce recently, Mr. Maxim said: "Judge Davis' very splendid tribute comes at a time when the amateur is more than ever in the public eye. At this moment, three separate Arctic expeditions are in the Far North depending almost entirely upon amateur contact via short wave radio telegraphy for their communication with civilization. The success of two successive MacMillan expeditions with amateur communication has convinced explorers generally that no other type of communication is so certain or so effective.

"The average citizen, hearing of the important tasks which the amateur has undertaken, no doubt visualizes a class of clannish, serious workers wrapped up in their hobby to the exclusion of outside interests, but this is not so. No class of people is more representative of your true American; no organization is more democratic in spirit and operation than the amateur's organization, the American Radio Relay league.

All Ages Friends.

"At our amateur conventions it is not an uncommon sight to see the 18 year old school boy in heated argument with a 50 year old business man. Two men at the same convention will hail each other with the familiarity of old friends —which indeed they are, although they may never have seen each other before. One of them may be a wealthy and retired manufacturer; the other a mechanic, but class is no barrier. Such incidents are duplicated time and again.

"Perhaps the explanation of the tremendous growth in amateur two-way communication lately is that people are learning that there is nothing difficult about the game; no demand for skill or knowledge other than that already possessed by the average home constructor of broadcast receivers.—Wisconsin News.

RECEIVE ORDER OVER RADIO

What is believed to be the first order to be received in Milwaukee from New Zealand by radio is in the possession of the Badger Motor Company, 215 North Ave.

Several days ago, the motor company received a letter from Lyall K. Smith, operator of WCCO, Minneapolis and 9WI, which is the amateur station of WCCO, containing an order for a motor.

Smith in forwarding the order, says he picked up the message on 39.5 meters and that if it had traveled by mail it would have reached here about 20 days later.

The message is from P. Drummond, Sunbury St., Anderson Bay, Dunedin, New Zealand, and is fairly lengthy.—Wisconsin News.

WKAF ENGINEER INVENTS NEW RADIO APPARATUS

A new piece of apparatus, which it is said will do much to improve the broadcasting of piano selections has been invented by Howard L. Ford, designer and engineer of WKAF, the Hotel Antlers' station.

AVIATORS MAY CARRY RADIOS ON PLANES

Radio plays an important part in aviation, and if present experiments prove a success, all mail planes will shortly be equipped with receiving sets to enable fliers to receive information vital to their safety.

In connection with the expansion of the air mail, service between Minneapolis and Chicago will soon be inaugurated, linking up the northwest with the easts and west air mail planes that pass through Chicago.

The first plane will be equipped with a radio receiving set for the purpose of making tests with broadcasting stations WENR, Chicago, and WCCO, Minneapolis-St. Paul, who will furnish weather reports and other information every fifteen minutes while the planes are in flight.—Wisconsin News.

INCREASED MESSAGES OVER U. S. STATIONS

The steady progress which is being made in high frequency communications is shown by the fact that the navy official messages thus handled from Washington have increased from 92,196 words in December to 190,866 in March, and from San Francisco 52,583 to 109,779 during the same period. Similar increases have been noted at other stations. San Diego, Calif.,

The Seal of
Safety and Service
COLUMBIA SAVINGS BANK
418 JACKSON STREET
MILWAUKEE, WIS.
If you have Valuable Papers you need a Lock Box in our Vault. The cost of a box is Less Than One Cent Per Day.

OTTO
BAUMGARDT
Palace Theatre Building
523 Grand Ave.
SMART FURNISHINGS AND HATS
S. O. E. Students get 5 per cent discount on purchases.
OPEN EVENINGS TILL 9:00

OF INTEREST TO STUDENTS
DEW DROP INN RESTAURANT
142 Oneida Street
In co-operation with the school offers the regular five dollar meal ticket for $3.75. Students thereby receive a discount of 25 per cent.
The Quality of the Food is High
You can purchase the meal ticket from Miss Vaughn in the school office main floor.

for instance, jumped from 14,000 words in December to 136,993 in March, which is considered quite phenomenal.

These high frequency circuits are expected to be of great value during the approaching summer static season and will be much more reliable when standard crystal controlled equipment is available.—Wisconsin News.

Mr. E. J. Simmonds, G2OD worked Australia on phone, March 21st, on a wavelength of 45.3 meters with an input of 95 watts. When international phone becomes an everyday affair we will be hunting up our old French, German and Spanish texts, as well as cultivating an English accent. Don't cha know.

We found the following squid in the Wireless World: "A house without a radio is like a house without a bath." Applying the same to the ham game we get; "A ham without a wavemeter is like a house without a bath."

In England the BCL's are not allowed to listen to a friends radio over the telephone for fear of being prosecuted. Is this a hardship or a blessing?)

Several Milwaukee radio amateurs have worked (been in communication with) other amateurs in different parts of the country who said they would see our Milwaukee amateurs soon as they will attend the School of Engineering this fall. No doubt there will be more radio enthusiasts this fall than ever before. Accordingly we are expecting a good deal of activity in the radio this fall.

A widely heard broadcasting station that broadcast setting up exercises every morning recently received a letter saying, "I want to thank you for broadcasting the setting up exercises. I listen to them every morning in bed."

The reply was, "Glad to hear you like them. I broadcast them lying in bed."

Attention Students

SAVE MONEY!

by getting a $5.00 meal ticket for $4.25

at the

Lakeview Lunch

Special Breakfast Prices
10c and 15c

Complete Dinners
25c, 30c, 35c

226 WISCONSIN ST.

Around the corner from the school

SCHOOL of ENGINEERING of Milwaukee

STUDENTS: Help yourself and increase our list of applicants for admission to the School of Engineering by filling out the blanks below:

MR. OSCAR WERWATH,
President Milwaukee School of Eng.
415-417 Marshall Street,
Milwaukee, Wisconsin.

Dear Sir:

The following are prospective students of first rank and should be on roll for enrollment in the term beginning March 29th, 1926.

.....

.....

.....

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.....

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Signed .....

MR. O. WERWATH, President
School of Engineering,
415 Marshall Street,
Milwaukee, Wis.

Dear Sir:

Please send information about

.....**Electrical Engineering, B. S. Degree**
.....**Commercial Electrical Engineering**
.....**Jr. Electrical Engineering**
.....**Armature Winding**
.....**D. C. and A. C. Motor and Generators**
.....**Automotive Electricity**
.....**Radio, Sales, Service, Building**
.....**Practical Electricity**
.....**Master Electrician**
.....**Electrotechnics**
.....**House Wiring**
.....**Motor Wiring and Testing**
.....**Power House Electrician**
.....**Power Plant Operation**

To .....

.....

Signed .....